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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/926,347	10/17/2001	Shogo Ishioka	011117	7860

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EXAMINER

HOLLINGTON, JERMELE M

ART UNIT PAPER NUMBER

2829

DATE MAILED: 12/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/926,347	ISHIOKA ET AL.	
	Examiner	Art Unit	
	Jermele M. Hollington	2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 and 10 is/are allowed.
- 6) ☒ Claim(s) 1-8 and 11-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
 a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>08/03</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings were received on Aug. 4, 2003. These drawings are approved.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on Aug. 4, 2003 was filed on Aug. 4, 2003. Accordingly, the examiner is considering the information disclosure statement.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Wood et al (5302891).

Regarding claim 1, Wood et al disclose [see Fig. 2] an inspection apparatus (burn-in fixture 11) comprising an inspection chip (die 21) for inspecting a conductive pattern of a circuit board (not shown in the figures), an insulative package (die cavity plate 13) mounting the inspection chip (21) thereon with allowing an inspection surface of the inspection chip (21) to be exposed from the insulative package (13), a chip-side bump electrode (bump 47) provided at each of electrode pads (bond pads 27 see Fig. 1) of the inspection chip (21), a package-side bump electrode (bump 48) provided at each of electrode pads (contact pads 37 see Fig. 1) of the

package (13), an anisotropic conductor (conductive traces 45) disposed to cover at least the chip-side bump electrode (47) and the package-side bump electrode (48) and a conductive layer (elastomeric strip 53) located on the anisotropic conductor (45) and extending at least in the range of the chip-side bump electrode (47) to the package-side electrode bump (48), wherein the anisotropic conductor (45) is thermo-compression bonded in between the conductive layer (53) and the chip-side bump electrode (47) and in between the conductive layer (53) and the package-side electrode bump (48), so as to electrically connect the chip-side bump electrode (47) with the package-side bump electrode (48) with through the conductive layer (53).

Regarding claim 2, Wood et al disclose the package (11) includes a recessed portion (spacer plate 29) on the front surface side thereof, wherein the inspection chip (21) is embedded mounted in the recessed portion (29).

Regarding claim 3, Wood et al disclose the package (11) has an end face [not numbered but shown in Fig. 2] on the front surface side thereof approximately flush with inspection surface of the inspection chip (21).

Regarding claim 4, Wood et al disclose the anisotropic conductor (45) is disposed to extend from the chip-side bump electrode (47) to the package-side bump electrode (48).

Regarding claim 5, Wood et al disclose the anisotropic conductor (45) is disposed to approximately cover the entire front surface of the inspection chip (21).

Regarding claim 6, Wood et al disclose the conductive layer (53) is composed of a conductor film formed in a planar shape and approximately in parallel with the inspection surface of the inspection chip (21).

Regarding claim 7, Wood et al disclose an insulative film (cover plate 51) disposed to cover approximately the entire front surface of the inspection chip (21).

Regarding claim 8, Wood et al disclose the package (13) includes a through hole (31) penetrating from the front surface to the rear surface of said package, and an external electrode (connector leads 33) provided at the rear surface, wherein a lead (conductive traces 45) is electrically connected to the external electrode (33) through said through hole (31) [via spacer plate 29].

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Haseyama et al (6229320) in view of Murphy et al (5702255).

Regarding claim 11, Haseyama et al disclose [see Fig. 7] a holder (IC socket 20) for holding an inspection apparatus (25) including a packaged inspection chip for inspecting a conductive pattern of a circuit board (test board 32) comprising a holding table (socket body 21), an elastic member (31) provided on the top surface of the holding table (21), a holding member (lid 22) mounted on the holding table (21), and a claw (lock lever 29). However, they do not have an inspection apparatus having a step down portion as claimed. Murphy et al disclose [see Fig. 3] a holder (socket assembly 10) comprising a holding table (socket body 24), a holding member (cover plate 28) mounted on the holding table (24), wherein the holding member (28) having a claw (tab member 54) and an inspection apparatus (BGA package 12) having a step down portion (lower surface 22). Further, Murphy et al teach that the addition of the inspection apparatus with a step down portion is advantageous because it improves electrical communication between the ball contacts and the terminal pads of the circuit board to reduce the thermal coefficients of expansion (TCE) stresses. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Haseyama et al by including inspection apparatus with a step down portion as taught by Murphy et al in order to improved electrical communication between the ball contacts and the terminal pads of the circuit board.

Regarding claim 12, Haseyama et al disclose the claw (29) is adapted to contact a part of the inspection apparatus (21) so as to define the upper limit position.

Regarding claim 13, Haseyama et al disclose a probe (30) mounted on the holding table (21) and penetrating the elastic member (31) to contact an electrode (28) provided in the

Art Unit: 2829

inspection apparatus (25), the probe (30) being elastically displaceable mounted on the inspection apparatus (25).

Regarding claim 14, Haseyama et al disclose [see Fig. 10] a holder (IC socket 20A) for holding an inspection apparatus (25) including a packaged inspection chip for inspecting a conductive pattern of a circuit board (test board 32) comprising a holding table (socket body 21), an elastic member (31A) fixed on top surface of said holding table (21) and an engaging member (positioning plate 36) fixed on top surface of the elastic member (31A) to retain an inspection apparatus (25). However, they do not have an inspection apparatus having a step down portion as claimed. Murphy et al disclose [see Fig. 3] a holder (socket assembly 10) comprising a holding table (socket body 24), a holding member (cover plate 28) mounted on the holding table (24), wherein the holding member (28) having a claw (tab member 54) and an inspection apparatus (BGA package 12) having a step down portion (lower surface 22). Further, Murphy et al teach that the addition of the inspection apparatus with a step down portion is advantageous because it improves electrical communication between the ball contacts and the terminal pads of the circuit board to reduce the thermal coefficients of expansion (TCE) stresses. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Haseyama et al by including inspection apparatus with a step down portion as taught by Murphy et al in order to improved electrical communication between the ball contacts and the terminal pads of the circuit board.

Regarding claim 15, Haseyama et al disclose the holder (20A) is adapted to hold said inspection apparatus (25) with keeping the inspection apparatus (25) in a slanted position, the

Art Unit: 2829

inspection apparatus (25) including a package inspection chip (25) for inspecting a conductive pattern of a circuit board (32).

Regarding claim 16, Haseyama et al disclose [see Fig. 7] a holder (IC socket 20) [see **Note** below] including a packaged inspection chip (25) for inspecting a conductive pattern of a circuit board (test board 32) comprising a holding table (socket body 21), a plurality of probes (30) provided in said holding table (21) and supporting the inspection apparatus (25) with brining each tip of said probes (30) into contact with an electrode (28) of the inspection apparatus (25) and a holding member (lid 22) mounted on the holding table (21) and having a claw (lock lever 29) for defining the upper limit position of the inspection apparatus (25) placed on the elastic member (31), wherein each of the probe (30) being elastically displaceable mounted on the inspection apparatus (25). However, they do not have an inspection apparatus having a step down portion as claimed. Murphy et al disclose [see Fig. 3] a holder (socket assembly 10) comprising a holding table (socket body 24), a holding member (cover plate 28) mounted on the holding table (24), wherein the holding member (28) having a claw (tab member 54) and an inspection apparatus (BGA package 12) having a step down portion (lower surface 22). Further, Murphy et al teach that the addition of the inspection apparatus with a step down portion is advantageous because it improves electrical communication between the ball contacts and the terminal pads of the circuit board to reduce the thermal coefficients of expansion (TCE) stresses. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the apparatus of Haseyama et al by including inspection apparatus with a step down portion as taught by Murphy et al in order to improved electrical communication between the ball contacts and the terminal pads of the circuit board.

[Note: The recitation "for holding an inspection apparatus" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).]

Conclusion

8. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bonelli et al (5055777), and Lornager et al (5791914) disclose a method and apparatus for a chip scale package in a socket.

10. Claims 9-10 are allowed over the prior art.

11. The following is a statement of reasons for the indication of allowable subject matter: in regarding claim 9, the prior art discloses all of the claimed invention except for the inspection signal is detected through a coupling capacitance lying between an inspection chip and a conductive pattern of a circuit board. Since claim 10 depends off of claim 9, it is also allowable.

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

Application/Control Number: 09/926,347
Art Unit: 2829

Page 9

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jermele M. Hollington whose telephone number is (703) 305-1653. The examiner can normally be reached on M-F (9:00-4:30 EST) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (703) 308-1233. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Jermele M. Hollington
Examiner
Art Unit 2829

J. M. H.
JMH
November 21, 2003

David H. Zarnke
David H. Zarnke
Primary Examiner
11/25/03